V. REMARKS

Entry of the Amendment is proper under 37 C.F.R. §1.116 because the Amendment: a) places the application in condition for allowance for the reasons discussed herein; b) does not raise any new issue requiring further search and/or consideration because the Amendment amplifies issues previously discussed throughout prosecution; c) does not present any additional claims without canceling a corresponding number of finally rejected claims; and d) places the application in better form for appeal, should an Appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. The amendments to the subject claims do not incorporate any new subject matter into the claims. Thus, entry of the Amendment is respectfully requested.

The Examiner objects to the specification because an informality. The specification is amended to obviate the objection. Withdrawal of the objection is respectfully requested.

Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as unpatentable over the admitted prior art in view of Kukimoto et al. (U.S. Patent No. 5,445,201) and at least one of Montagne (U.S. Patent No. 3,763,911) and Japan 609. The rejection is respectfully traversed.

The admitted prior art shows a pneumatic tire having ribbed treads with circumferential grooves having widths that narrow during inflation. Also, the admitted prior art shows groove walls of a main groove being inclined at 80 degrees with respect to the tread. The Office Action admits that a protrusion is not provided at the groove bottom.

Kukimoto shows a pneumatic tire with a tread having circumferential main grooves with groove walls outwardly inclined and a ribbed shaped protrusion located in the groove as referred to in Figure 22b. Additionally, a protrusion located in the groove is also shown in Figures 17a, 17b, 20b and 21 of the prior art reference. Also, a distance of 2 mm is set between a top surface of the protrusion and the tread surface.

Montagne illustrates a tire tread with protruding elements disposed between adjacent ribs as shown in Fig. 1.

Japan 609 teaches a pneumatic tire with a plurality of main grooves formed into a tread surface and extending in the radial direction of the tire. In particular, Japan 609 shows a protrusion in a circumferential groove. Further, the protrusion side walls and the groove walls are oriented parallel to each other as viewed in cross section.

Claim 1 is directed to a pneumatic tire provided with a plurality of main grooves extended in a tire circumferential direction on a tread surface and a main groove having a groove width narrowed during inflation among the plurality of main grooves. Claim 1 recites that both groove walls are inclined from the tread surface so as to define an acute angle between respective ones of the groove walls and the tread surface so that the groove width of the main groove becomes wider toward a groove bottom of the main groove. Further, claim 1 recites that a generally trapezoidally-shaped protrusion divides a groove space of the main groove in a tire width direction and is provided at the groove bottom with the protrusion having a pair of slanted side walls and a flat top surface disposed apart from the groove bottom and connecting the pair of slanted side walls with respective ones of the pair of slanted side walls and the both groove walls being oriented parallel to each other as viewed in cross-section. Additionally, claim 1 further recites that a height of the protrusion is made equal to or lower than the tread surface, a height difference between the protrusion and the tread surface is set in arrange from 0 to 2 mm, the height of the protrusion is at least 12 mm and a ratio of the height of the protrusion to a groove depth of the main groove is set at 0.8 or higher.

Claim 3 is directed to a pneumatic tire provided with a plurality of main grooves extended in a tire circumferential direction on a tread surface. Claim 3 recites that, with regard to a main groove having a groove width narrowed during inflation among the plurality of main grooves, both groove walls are inclined from the tread surface so as to define an acute angle between respective ones of the groove walls and the tread surface so that the groove width of the main groove becomes wider toward a groove bottom of the main groove, and a protrusion dividing a groove space of the main groove in a tire width direction is provided at the groove bottom with the protrusion having a pair of side walls and respective ones of the pair of side walls and the both groove walls being oriented parallel to each other as viewed in cross-section. Further, claim 3 recites that the protrusion is made equal to or lower

than the tread surface, a height difference between the protrusion and the tread surface is set in a range from 0 to 2 mm, the height of the protrusion is at least 12 mm and a ratio of the height of the protrusion to a groove depth of the main groove is set at 0.8 or higher.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claims 1 and 3. Specifically, it is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests a height of the protrusion being at least 12 mm and a ratio of the height of the protrusion to a groove depth of the main groove being at 0.8 or higher as recited in claims 1 and 3. Thus, it is respectfully submitted that the United States Patent and Trademark Office fails to consider these claimed features of the invention that are missing from the prior art. As a result, it is respectfully submitted that claims 1 and 3 are allowable over the applied art.

When evaluating a claim for determining obviousness, all limitations of the claim must be considered. Under 35 U. S. C. 103, it provides that:

> a patent may not be obtained if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

Because the applied art fails to teach or suggest the missing features of claims 1 and 3, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine the features of the applied art, because such combination would not result in the claimed invention.

The Federal Circuit held that a reference did not render the claimed combination *prima facie* because the Examiner ignored a material claimed temperature limitation which was absent from the reference. By analogy, the Examiner has ignored a material claimed range of a ratio of the height of the protrusion to a groove depth of the main groove being at 0.8 or higher as well as a height of the protrusion being at least 12 mm. The Federal Circuit in this case held want of *prima facie* obviousness in that "the mere absence [from the reference] of an explicit requirement [of the claim] cannot reasonably be construed as an affirmative statement that the requirement is in the reference.

Furthermore, it is respectfully submitted that the results and advantages are a part of the claimed invention as a whole. It is a basic tenet of patent law that the U.S. Patent and Trademark Office is not permitted to ignore the results and advantages produced by claimed subject matter, of which the prior art is devoid, simply because the claimed limitations are similar to that otherwise barren prior art.

It is respectfully submitted that the inventors have set forth in the application on page 2, paragraph 3 through page 3 the results and advantages achieved from the invention, to wit:.

> As described above, with regard to the main groove having the groove width narrowed during the change in tread radius during inflation, by making both of the groove walls inclined so that the groove width becomes wider toward the groove bottom, it is made possible to control the significant change in ground-contacting pressure in the rib edge portions at both sides of the main groove. Moreover, by providing a protrusion dividing the groove space in the tire width direction on the foregoing groove bottom, bending of the tread portion due to the change in tread radius is disbursed onto two points of both sides of the protrusion; therefore, the ground-contacting pressure on the both sides of the main groove can be equalized. Furthermore, it is made possible to absorb, in the protrusion, frictional energy acting so as to cause uneven wear on the rib edge portions of both sides of the main groove. Hence, uneven wear such as railway wear occurring in the vicinity of the main groove can be effectively controlled by the synergy of the inclined structure of both groove walls and the main groove and the protrusion.

On page 7, line 25 through page 8, line 10, it states:

> Therefore, the ground-contacting pressure on both sides of the main groove 7b can be equalized.

On page 8, lines 3-10, it states:

> Furthermore, since the protrusion 9 is provided at the groove bottom of the main groove 7b, the protrusion 9 absorbs the frictional energy acting on the rib edge portions continuous with the both groove walls W1 and W2. Therefore, uneven wear such as railway wear occurring in the vicinity of the main groove 7b can be effectively controlled by the synergy of the inclined structure of the both groove walls W1 and W2 and the protrusion 9.

Also, on page 11, lines 9-12, it states:

> ..., even if the groove width of the main groove is narrowed due to the change in tread radius during inflation, the uneven wear occurring in the vicinity of the main grooves can be effectively controlled.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the results and advantages of the claimed invention described above.

Under 35 U.S.C. §103(a), a patent may not be obtained though the invention is not identically disclosed or described. . . .if the differences between the subject matter sought to be patented and the prior art are such that the *subject matter as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art. It is respectfully submitted that that, based on the above results and advantages of the claimed invention, the claimed invention as a whole would not have been obvious to a person of ordinary skill in the art at the time the invention was made.

Claim 6 depends from claim 1 and claim 3 includes all of the features of these claims. Thus, it is respectfully submitted that claim 6 is allowable at least for the reason claims 1 and 3 are allowable as well as for the features it recites.

Withdrawal of the rejection is respectfully requested.

Claim 4 is rejected under 35 U.S.C. 103(a) as unpatentable over the admitted prior art in view of Kukimoto et al. and at least one of Montagne and Japan 609 and further in view of Japan 9-11709 (Japan 709). The rejection is respectfully traversed.

Japan 709 teaches a pneumatic radial tire that is particularly useful for carrying heavy loads. This reference shows a circumferential sipe formed in a protrusion.

Claim 4 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that claim 4 is allowable at least for the reason claim 1 is allowable as well as for the features it recites. In particular, claim 4 recites that the protrusion is divided in the tire width direction by a slit formed into the flat top surface towards the groove bottom and extending circumferentially thereabout to form a first divided protrusion section and a second divided protrusion section in facial contact with the first divided protrusion section at the slit. It is respectfully

submitted that the features of claim 4 are neither taught nor suggested in the applied art.

Withdrawal of the rejection is respectfully requested.

Claim 5 is rejected under 35 U.S.C. 103(a) as unpatentable over the admitted prior art in view of Kukimoto et al. and at least one of Montagne and Japan 609 and further in view of Overman (U.S. Patent No. 2,254,622). The rejection is respectfully traversed.

Overman teaches a method for forming tires with the ribs of different compositions.

Claim 5 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that claim 5 is allowable at least for the reason claim 1 is allowable as well as for the features it recites. Claim 5 recites that a rubber composition constituting the protrusion and a rubber composition constituting said tread surface are made different from each other. Thus, it is respectfully submitted that claim 5 is allowable for this additional reason.

Withdrawal of the rejection is respectfully requested.

In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

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